Data Collection Activity
Walk This Way

Name _____

The data we have collected and graphed is a distance vs. time scatterplot of a person walking toward the motion detector at a constant rate. The data appears to be linear, so we will attempt to fit the data with a linear function in the form:

$$y = mx + b$$

1. The independent variable, **x**, represents _____

   Units _____

   The dependent variable, **y**, represents _____

   Units _____

2. Trace on your scatterplot to find two points that best represent the data. These points are:

   (_____ , _____) and (_____ , _____)

3. Use these points to find the **slope** of the line and then the **equation** of the line. Decimals are OK for slope and y-intercept. Show your work.

Slope: _____ (Fraction)

_____ (Decimal)

Equation: y = _____ x + _____

4. Put the decimal form of the equation of the line into Y1 of your graphing calculator and graph it to see if it is a good representation of the data. If it is not, find your mistake and change it!

5. Rewrite the decimal form of the equation using **names of variables** instead of x and y.

_____ = _____ • _____ + _____

6. The **slope** of the line represents something very important to the problem. What does the **slope** represent?

_____

_____

7. The **y-intercept** also represents something important to the problem. What does the **y-intercept** represent?

_____

_____

8. **Additional Questions:**

According to your model/equation,

1. How far should the person be from the motion detector after walking for 1.5 seconds? Show the calculations necessary to answer this question.

   After 1.5 seconds the person was _____ feet from the motion detector.

   Trace on the scatterplot to see how close your prediction was.

2. How long was the person walking until he/she was 4 feet from the motion detector? Show the calculations necessary to answer this question.

   The walker was 4 feet from the motion detector after _____ seconds.

   Trace on the scatterplot to see how close your prediction was.

3. How long would it take for the walker to hit the motion detector? Show the calculations necessary to answer this question.

   The walker would hit the motion detector after _____ seconds.

4. What effect would it have on the graph and the equation if the person was walking toward the motion detector at a **faster rate**?

   The graph would be _____ and the equation _____

   _____

5. What effect would it have on the graph and the equation if the person was walking **away from** the motion detector, instead of toward it?

   The graph would be _____ and the equation _____

   _____